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MARANTACEAE IN SULAWESI

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ABSTRACT
ARDIYANI, M., POULSEN, A. D., SUKSATHAN, P., BORCHSENIUS, F. 2010. Marantaceae in Sulawesi. Reinwardtia 13(2): 213–220. — Six species of *Marantaceae* occur in Sulawesi. We present a key to the species together with a taxonomic treatment with notes on species delimitation, distribution, habitat and ecology, vernacular names and uses. One species endemic to Sulawesi and not covered by any contemporary publication, *Phrynium longispicum* (Warb. ex K. Schum.) Suksathan & Borchs. is described and neotypified. *Donax canniformis* (G. Forst.) K. Schum., *Phrynium pubinerve* Blume, *Phrynium robinsonii* (Valeton) Suksathan & Borchs, *Stachyphrynium latifolium* (Blume) K. Schum. and *Stachyphrynium repens* (Körn.) Suksathan & Borchs. are also reported from Sulawesi and characterized. For the two last species these occurrences represents an extension of their previously known range across Wallace's line.

Key words: *Donax*, ethnobotany, neotypification, *Phacelophrynium*, *Phrynium*, *Stachyphrynium*, Sulawesi, Wallace's line

ABSTRAK
ARDIYANI, M., POULSEN, A. D., SUKSATHAN, P., BORCHSENIUS, F. 2010. Marantaceae di Sulawesi. Reinwardtia 13(2): 213–220. — Enam jenis dari suku *Marantaceae* terdapat di Sulawesi. Disajikan kunci ke jenis beserta perlakuan taksonominya. Satu jenis merupakan endemik di Sulawesi yang belum pernah ada dalam publikasi kontemporer sebelumnya, *Phrynium longispicum* (Warb. ex K. Schum.) Suksathan & Borchs. dideskripsikan dan dineotipifikasi. *Donax canniformis* (G. Forst.) K. Schum., *Phrynium pubinerve* Bl., *Phrynium robinsonii* (Valeton) Suksathan & Borchs, *Stachyphrynium latifolium* (Blume) K. Schum. dan *Stachyphrynium repens* (Körn.) Suksathan & Borchs. juga dilaporkan dari Sulawesi dan dikarakterisasi. Keberadaan dua jenis terakhir melampaui distribusi yang sebelumnya hanya diketahui di timur garis Wallace.

Kata kunci: *Donax*, etnobotani, neotipifikasi, *Phacelophrynium*, *Phrynium*, *Stachyphrynium*, Sulawesi, garis Wallace.

INTRODUCTION

The *Marantaceae* includes about 23 genera and 550 species worldwide (Andersson, 1998). Eight genera and an estimated 55 species occur in tropical Asia (Suksathan *et al*., 2009). Over the last few years, several publications have helped clarify the taxonomy of the West Malesian species (Clausager & Borchsenius, 2003; Suksathan & Borchsenius, 2003, 2005, 2008; Poulsen & Clausager, 2004; Clausager *et al*., 2006; Suksathan *et al*., 2006, 2010), but the *Marantaceae* occurring east of Wallace's line are still very poorly documented.

Prior to our recent fieldwork, the most recent account of the *Marantaceae* of Sulawesi was by Koorders (1898) who, in his account of the flora of north Sulawesi, listed three species: *Maranta dichotoma* Wall. [a synonym of *Schumannianthus dichotomus* (Roxb.) Gagnep. misapplied to *Donax canniformis* (G. Forst.) K. Schum.]; *Maranta indica* Tussac [a synonym of the widely cultivated root crop *M. arundinacea* L.] and *Phrynium capitatum* [a synonym of *P. pubinerve* Blume which is probably a misidentification of *P. longispicum*].

In this paper we provide a taxonomic account of the *Marantaceae* of Sulawesi. The data presented

are based on field work carried out in 2008 and 2009 and examination of herbarium specimens found at AAU, BO, E, L and S. The endemic *Phrynium longispicum* (Valeton) Suksathan & Borchs., for which no up-to-date description exists, is described in full and neotypified. For the remaining five species which are already covered by detailed descriptions in the literature we provide only a brief characterization. Generic delimitation follows Suksathan *et al*. (2009). Descriptive terminology regarding inflorescence structure follows Clausager & Borchsenius (2003). The term 'special paraclade' refers to the basic flower-bearing structure of the inflorescence while 'fertile bracts' refer to those bracts that subtend a special paraclade.

Key to the species of *Marantaceae* in Sulawesi

1\. a. Shrub-like plants with a tall and richly branched aerial stem. Fruit fleshy, indehiscent........................ ....*Donax canniformis*

b. Rosulate plants with short, unbranched aerial stems arising from the rhizome. Fruit dry, capsular..........2

2\. a. Sepals less than 1/5 of the corolla tube [*Stachyphrynium*]..3

b. Sepals more than 1/3 of the corolla tube [*Phrynium*]..4

3\. a. Inflorescence borne on a separate, leafless shoot; leaf blade 40–85 cm long.. ....*Stachyphrynium latifolium*

b. Inflorescence interfoliar; leaf blade 10–20 cm long.. ....*Stachyphrynium repens*

4\. a. Fruit red. Inflorescence capitate. Two outer staminodes...............................*Phrynium pubinerve*

b. Fruit green or brown. Inflorescence branches clearly discernible. One outer staminode.......................5

5\. a. Flower up to 40-50 mm long. Inflorescence with 1–3 basal branches arising in the same point, each with several fasciculate, flower bearing branches separated by very short internodes............................ ....*Phrynium longispicatum*

b. Flower up to 25 mm long. Inflorescence with several lateral branches, separated in the proximal part by internodes up to 6.5 cm long................................ ....*Phrynium robinsonii*

1. DONAX CANNIFORMIS (G. Forst.) K. Schum.

Donax canniformis (G. Forst.) K. Schum., Bot. Jahrb. Syst. 15(4): 440. (1893). — *Thalia canniformis* G. Forst., Fl. Ins. Austr.: 1 (1780). Type: The New Hebrides (Vanuatu islands) *J.G.A. Forster s.n.* (Holotype BM!).

Donax grandis (Miq.) Ridl., J. Straits Branch Roy. Asiat. Soc. 32: 176. 1899. For a full nomenclatural account see Suksathan & Borchsenius (2005).

Upright herb with a richly branched stem, to 5 m tall. *Leaves* clustered towards the ends of the branches; lamina 8–30x4–20 cm. *Inflorescences* several on each plant, each to 30 cm long, richly branched, lax, composed of up to 15 major branches of increasing orders (usually 2–5 branches in Sulawesi plants). Special paraclade markedly elongate, primary axis 25–30 mm long (dolichoblastic), with 1–2 flower pairs; pedicel of individual flowers 5–25 mm long, each with an associated small glandular bracteole that functions as a nectary to attract ants that protect flowers and developing fruits against herbivores. *Flower* white to yellowish white, *ca.* 15 mm long; corolla tube *ca.* 5 mm long; staminal tube *ca.* 2 mm longer than corolla tube. *Fruit* white or greenish cream and fleshy at maturity, green while immature, indehiscent, smooth and globose, *ca*. 1–1.4 cm in diameter; seeds 1–3, black.

Distribution. Widespread and common throughout S. E Asia, from India to the Solomon Islands and Vanuatu and northwards to Orchid Island (Taiwan)

Habitat and ecology. Primary and secondary lowland rainforest, on hillslopes, rockbeds along small streams and wet areas such as alluvial flatland. Common, especially in open and disturbed places.

Vernacular Names. Moah, Moha (Minahassa, Sangir language) (*Poulsen et al. 2602*; *Koorders 19681ß*); Bomban (Mongondouw) (*Arifiani et al. 377*; *Wardi 020*); Bawambanan'a (Talaud) (*H.J. Lam 3061*); Neue (Kobaena) (*Widjaja 771*); Nena (Buton) (*Uji* 4686); Beeo (Buton) (*Widjaja* 568); Elusan im bolai (Tontemboan or Tompakewa language; Koorders 1898); Nelusan ing kawok (Tulur language; Koorders 1898); Tuis in talun (Tontemboan or Tompakewa language; Koorders 1898); Mundung (Tulur language; Koorders 1898).

Uses. For making mats (*Poulsen et al. 2602*). Stem used as string (*Widjaja 771*). Short lengths of rattan -like cane can be obtained from the green outer layer of the internodes (*Coode 6066*). Medicinal plants (precise usage not specified - *Uji 4686*). Inner young shoot is grated then squeezed, taken internally to treat high fever (*Arifiani et al. 377*). Used to climb *Metroxylon*; for making fish traps; and young stems used against skin rashes (Koorders 1898 – as *Maranta dichotoma*).

Notes. Full botanical descriptions of *Donax canniformis* in Borneo and Thailand, respectively, can be found in Clausager & Borchsenius (2003) and Suksathan & Borchsenius (2008).

Specimens seen from Sulawesi. **North Sulawesi**. Dua Saudara Nature Reserve, Temboan, 6 km S of Batu Puteh village, small valley in forest (1°31'13"N, 125°08'21"E), 350 m, 14 February 2008, fruiting, *Poulsen, Ardiyani, & Porawouw 2602* (AAU, BO, E); Mauk Molotong, along Mauk river (0°42'02.7"N, 124°02'36.3"E), 300–350 m, 22 May 2002, flowering and fruiting, *Arifiani, Nurdin, Lepinus & Marselak 337* (BO); Manado, no date, flowering, *Riedel 5903* (BO); Bogani Nani Wartabone National Park, Toraut, April 2004, fruiting, *Nurdin 35* (BO); Menado, o. afd. Poso. Tusschen, 1 September 1938, flowering and fruiting, *Eyma 3513* (BO, L); Bolaang Mongondouw, Dumoga Bone National Park, Toraut Dam (0°34'N, 123°54'E), 220 m, 23 March 1985, fruiting, *Vogel & Vermeulen 6697* (BO, L); Menado, Oetan aris, 10 m, 28 December 1894, flowering and fruiting, *Koorders 19681ß* (BO); Menado, oerwand by bivak Pinamvrangan naarby Kajoewatoe, 500 m, 4 March 1895, flowering and fruiting, *Koorders 19683ß* (BO); Sangir and Talaud Islands, Talaud, Salibabu, S.E. slope of Ajambana Mountain, 180 m, 20 May 1926, flowering, *Lam 3061* (BO); Gorontalo. *Riedel s.n.* (BO); Kec. Suwawa, Desa Tulabolo, Motomboto, 400 m, 24 December 1994, fruiting, *Afriastini & Rohajawati 2900* (BO); **Central Sulawesi**. Balukang, Desa Siboang, Dusun Maros, near Kampung Sipatoh (0°28'59"S, 120° 06'25"E), 197 m, 24 July 2002, fruiting, *Brown, Craven, Juswara & Ramadhanil 118* (BO, CEB); Palolo, Kamarora, forest garden behind Lore Lindu National Park fieldstation (1°15'S, 120°13'E), 700 m, 22 March 2001, fruiting, *Kessler et al. PK 3072* (BO, CEB); Kabupaten Luwu, Desa Teromu, Farhumpenai, 350 m, 17 February 1986, fruiting, *Wardi Wd. 020* (BO); **South Sulawesi**. South West Peninsula, NE of Makassar within 54–60 km on the road (5°01'S, 119°35'E), 3 July 1976, fruiting, *Meijer, W. 10718* (BO); 3–5 km W of Soroako (2°15–3°'S, 121°–121°45'E), 450 m, 15 July 1979, flowering and fruiting, *Balgooy et al. 4028* (BO, L); Bantimurung National Park, Kassekebo. Alluvial area below limestone cliffs (5°0'44.6"S, 119°41'16.7"E), 65 m, 22 January 2009, flowering and fruiting, *Poulsen, Ardiyani, Firdaus, Iqbal, Tigor & Mia 2760* (AAU, BO, CEB, E); **Southeast Sulawesi**. District Kolaka, Subdistrict Uluiwoi, village Sanggona, near Hutumolae, base of Gunong Pondunaa in Mount Watu Wila (3° 46.448'S, 121°39.226'E), 175 m, 12 May 2008, flowering and fruiting, *Wen, & Kartonegoro 10196* (BO); Buton Island, Lawo-lawo area, Wakunti forest, Bau-bau, 26 June 1978, fruiting, *Widjaja 568* (BO); Kobaena Island, Enano, Matansolonsa Mountain, 5 July 1978, fruiting, *Widjaja 771* (BO); Kolaka, Poli-polia, Pangi-pangi, 100 m, 24 October 1978, flowering and fruiting, *Prawiroatmodjo & Maskuri 1537* (BO, L); Kendari, Kabupaten Unaha, Sampara, Atolanu Mountain, 70 m, 6 February 1986, flowering and fruiting, *Amir 65* (BO); Buton Island, Kaboengka, 180 m, 15 February 1929, fruiting, *Kjellberg 246* (BO, L); Kolaka area, Watuwila foothills, above Sanggona, "Mokuwu camp", forest in valley of Mokowu R. (3°48'S, 121°39'E), 200 m, 29 October 1989, flowering and fruiting, *Coode 6066* (BO, L, K); Buton Island, North Buton Game Reserve, Maligano-Ronta km. 12 (4°42'04"S, 122°55'18"E), 200 m, 27 April 2003, flowering and fruiting, *Uji 4686* (BO).

2. PHRYNIUM LONGISPICUM (Warb. ex K. Schum.) Suksathan & Borchs.

Phrynium longispicum (Warb. ex K. Schum.) Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). — *Phacelophrynium longispica* Warb. ex K. Schum., in Engler, Pflanzenr. 4(48): 122 (1902). Type: Celebes, Northern Minahassa Peninsula, Boyong, *Warburg, O. 15739* (B destroyed, Syntype); Celebes, Tomohon, June 1894, *Sarasin, K.F. & Sarasin, P. 411* (B destroyed); Northern Minahasa Peninsula, along trail from Boyong Atas village to Gunung Lolombulan (1°5'18.3"N, 124° 25'23.2"E), 700 m, 24 February 2009, flowering and fruiting, *Poulsen, A. D., Kinho, J., Sandaling, T. & Mandei, N. 2815* (Holoneotype BO!, Isoneotypes AAU!, E!, SING!). — Fig 1.

Rosulate, clustering herb, to 1.5 m tall. *Leaves* (1 –) 4–5 on each shoot; petiole to 135 cm long; pulvinus 3.5–7.5 cm long, yellowish green; leaf blade 27–52x15–22 cm. *Inflorescence* borne among the leaves, terminal on a 25–55 cm tall stem with a node *ca*. 3 cm below the base of the inflorescence, the node supporting a small leaf or a short bladeless sheath; inflorescence 14–18 cm tall, at first almost spicate, in later stages with 1–3 basal branches, each with up to 10 clustered, flower-bearing branches, 3–15 cm long; sterile basal bracts to 8 cm long; fertile bracts 30–35 mm long, to 20 mm wide, rolled into a tubular structure; special paraclade with a single flower-pair, associated prophyll 22x7 mm. Flowers white to yellowish white, 40–50 mm long; sepals 9–10 mm long, narrow, *ca*. 1 mm wide in distal 1/3; corolla tube 16–20 mm long, lobes 16–17x3–5 mm, dark pigmented in longitudinal stripes in distal 1/3; staminodal tube *ca*. 7 mm longer than corolla tube; outer staminode 1, petaloid lobe *ca*. 12x6 mm; callose staminode with petaloid lobe *ca*. 8x7 mm, bifid; cucullate staminode *ca*. 5 mm long; fertile stamen 6 mm long, theca *ca*. 2x1 mm. *Fruit* green (immature), rounded-triangular in cross-section, 9x7 mm, with scattered white simple hairs; pedicel *ca*. 3 mm long; seeds 3, angular, rugose, 6x4 mm; aril white (immature), bilobed.

Distribution. Endemic to Sulawesi.

Habitat and ecology. In disturbed primary forest and swampy forest. Alluvial flat land to lower hill slopes. Recorded up to 1,075 m elevation.

Vernacular name. Polipot (*Uji 4496*).

Uses. Ornamental plants (*Uji 4496*).

Notes. Both syntypes cited in the original

description of the species are lost. As neotype we have chosen a recent collection with both flower material in alcohol and fruits (*Poulsen et al. 2815*) from Boyong; the same locality as one of the syntypes, *Warburg 15739*. This neotype well agree with the protologue of the species. *Phrynium longispicum* was included in the phylogenetic study by Suksathan and Borchsenius (2009) under the accession name *Phacelophrynium* sp. 1 (DNA extracted from the specimen *Vogel & Vermeulen 6721*, L). The results show that *P. longispicum* is more closely related to Philippine taxa such as *Phrynium interruptum* than to the New Guinea clade of *Phrynium* (including species such as *P. giganteum, P. kaniense* and *P. macrocephalum*).

Specimens seen from Sulawesi (other than the neotype). North Sulawesi. Gunung Masarang. Secondary forest (1°19'33"N, 124°52'6"E), 1,075 m, 20 February 2008, flowering and fruiting, *Poulsen, Ardiyani & Kaunang 2624* (AAU, BO, E); Bogani Nani Wartabone National Park, Mount Simbalang, 800 m, 20 May 2002, flowering, *Uji 4496* (BO); Bolaang Mongondouw, Dumoga Bone National Park, Toraut Dam

Fig. 1. *Phrynium longispicum* (Warb. ex K. Schum.) Suksathan & Borchs. Photograph of *Poulsen et al. 2815* (the neotype) by A.D. Poulsen.

(0°34'N, 123°54'E), 220 m, 25 March 1985, flowering and fruiting, *Vogel & Vermeulen 6721* (BO, L); Minahasa (Menado), 1896, *Koorders & Valeton 19686ß* (BO); Manado, Tonsealama, 700 m, 4 December 1932, flowering, *Wisse 53* (BO); Along trail from Boyong Atas village to Gunung Lolombulan (1°5'18.3"N, 124° 25'23.2"E), 700 m, 24 February 2009, flowering and fruiting, *Poulsen, Kinho, Sandanling & Mandei 2815* (AAU, BO, E, SING); Gurupahi, 18 Mar 1917, flowering, *Kaudern 25* (S); **Central Sulawesi**. Area of Mt. Nokilalaki, Paliti by Lake Lindu (1°13'S, 120°08'E), 970 m, 2 May 1975, flowering, *Meijer 9960* (BO) Forest patch near trial in garden area (0°59'20.2"N, 121° 36'4.3"E), 50 m, 22 February 2009, flowering, *Poulsen & Kinho 2810* (AAU, BO, E).

3. PHRYNIUM PUBINERVE Blume

Phrynium pubinerve Blume, Enum. Pl. Javae: 38 (1827). Type: Indonesia, Java, Blume s.n. (Holotype L!).
Phrynium capitatum Willd., Sp. Pl. 1: 17. 1797 (illegitimate name based on the same type as *Pontederia ovata* L.).
Phrynium rheedei Suresh & Nicolson in Taxon 35: 355. 1986.
Phrynium malaccense Ridl., J. Straits Branch Roy Asiat. Soc. 32: 180. 1899.
Phrynium philippinense Ridl., Leafl. Philipp. Bot. 2: 570. 1909.
Phrynium pubigerum Blume, Enum. Pl. Javae: 37. 1827., For a full nomenclatural account see Suksathan & Borchsenius (2005).

Rosulate herb, 0.7–3.5 m tall. *Leaves* 2–3 per shoot; lamina 23–82 × 9–30 cm, glabrous except for small hairs around the midrib. *Inflorescence* terminal on a leafy shoot, erect, usually appearing to protrude from the petiole of an accompanying leaf, capitate, 4–8 cm in diameter; bracts sheathing the inflorescence quickly withering apically and dissolving into a decaying fibrous mesh; flower pairs 2–4 per special paraclade. *Flowers* pinkish white, ca. 1.8 cm long; sepals ca 10 mm long; corolla tube 4–5 mm long; outer staminodes 2, their petaloid lobes 3–4.5 mm long. *Fruits* bright red, elongate to triangular, ca 15 × 10 mm, dehiscent; seeds 3, grey, with a small aril.

Distribution. Widely distributed in SE Asia, from India to Burma, Thailand, Laos, Vietnam, Cambodia, Peninsular Malaysia, Sumatra, Java, Borneo, the Philippines and New Guinea.

Habitat and ecology. This species seems to prefer a moderate level of habitat disturbance, and is often found growing next to streams, roads and trails, or even in the understorey of old rubber plantations.

Vernacular name. Onese (Tolaki language) (*A.D. Poulsen et al. 2791*).

Uses. Juice from the stem is used to cure irritant eyes; the stem is used for weaving or to keep roof thatching in place (*Poulsen et al. 2791*).

Notes. A widespread and variable species found throughout SE Asia. It is recognized by the combination of red fruits, capitate inflorescence with tattering inflorescence bracts, and flowers with two outer staminodes. Taxonomic treatments for Borneo and Thailand, with full botanical descriptions, are provided by Clausager and Borchsenius (2003) and Suksathan & Borchsenius (2008), respectively. Herbarium material of this species is often identified as *Phrynium capitatum* Willd. which, however, is an illegitimate name synonymous with *P. pubinerve* (see Clausager & Borchsenius 2003).

Specimens seen from Sulawesi. **Southeast Sulawesi**. Selayar, *s.d.*, flowering and fruiting, *Teysmann 13605* (BO); Boroboro range, N. of Wolasi. 16 km S of Kendari (4°9'14.6"S, 122°29'38.2"E), 180 m, 11 February 2009, flowering and fruiting, *Poulsen, Ardiyani, Chahyadi & Gufrin 2791* (AAU, BO, E, QBG).

4. PHRYNIUM ROBINSONII (Valeton) Suksathan & Borchs.

Phrynium robinsonii (Valeton) Suksathan & Borchs., Bot. J. Linn. Soc. 159: 394 (2009). — *Phacelophrynium robinsonii* Valeton, in Merrill, Interpr. Rumph. Herb. Amboin.: 166 (1917). Type: Indonesia, Ambon, Mahija, 7 August 1913, along small stream, *ca*. 250 m alt., Specimen labeled "*Robinson Plantae Rumphianae Amboinenses No. 521*" (Holotype BO!). — Fig 2.

Herb, to 2 m tall. Fertile shoots with 15–45 cm tall stem. Sheath of basal leaf *ca*. 120 cm long, petiole 10 cm long, blade 40–50x17–25 cm. *Inflorescence* with peduncle 10–20 mm long measured from node of subtending leaf, primary inflorescence branches 2–4, the proximal ones separated by internodes of 30–65 mm long. Primary bracts to 25 mm long, persisting. Flower pairs 2–3 per special paraclade. *Flowers* to 25 mm long; sepals ca. 7 mm long; corolla tube *ca*. 16 mm long, petal lobes elongate, 10–12 mm long; outer staminode 1, linear, *ca*. 7 mm long; callose staminode with an elliptic, emarginate petaloid lobe, ca. 6 mm long. *Fruit ca*. 10x5 mm; seeds 1(–2).

Distribution. Endemic to the Moluccas and Sulawesi.

Habitat and ecology. Not much is known, but it

seems to occur mostly at low elevations.

Notes. This species is known from several collections in the Moluccas and a single record from Sulawesi. We have not found this species in the field and we have had no access to fresh or pickled flower material. The above description of flowers is based on Valeton's (1917) protologue. According to Valeton, the flowers of *P. robinsonii* are markedly smaller (25 mm long) than those of *P. longispicum* (ca. 40 mm long). The inflorescence structure also seems to be different in the two species, more elongate and with fewer branches per node in *P. robinsonii*. The limit between the two species should, however, be reinvestigated as more material becomes available.

Specimens seen from Sulawesi. Palopo, Bulong, sea level, 28 February 1929 *Kjellberg 1996* (BO, S).

5. STACHYPHRYNIUM LATIFOLIUM (Blume) K. Schum.

Stachyphrynium latifolium (Blume) K. Schum., in Engler, Pflanzenr. IV. 48 (Heft 11): 49 (1902). — *Phrynium latifolium* Blume, Enum. pl. Javae : 37 (1827). Type: Indonesia, Java, Bantam province, *Blume s.n.* (holotype L!).

Stachyphrynium cylindricum (Ridl.) K. Schum., in Engler, Pflanzenr. 4(48): 49. 1902.

Stachyphrynium griffithii (Baker) K. Schum., in Engler, Pflanzenr. 4(48): 49. 1902. For a full nomenclatural account see Suksathan & Borchsenius (2005).
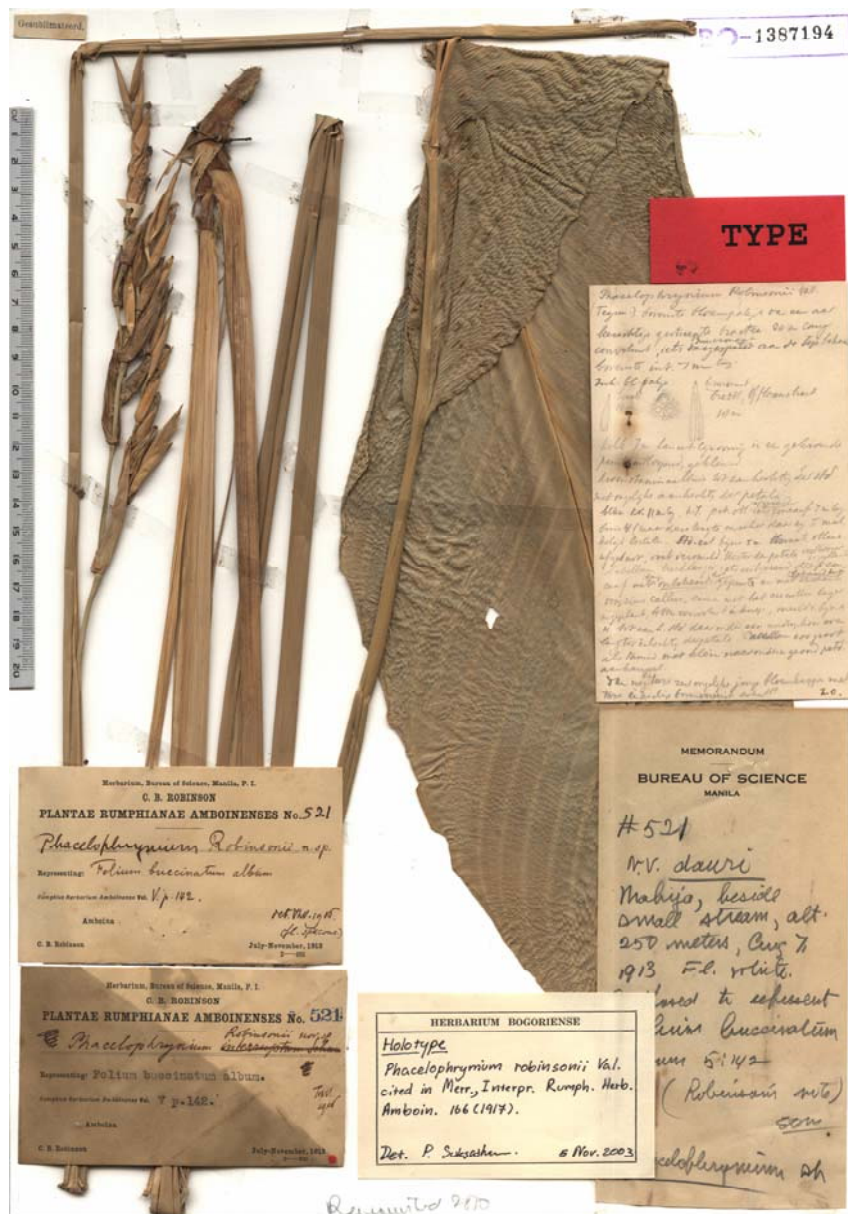
Fig. 2. . *Phrynium robinsonii* (Valeton) Suksathan & Borchs.

Rhizomatous ground herb, 1.7–4 m tall. *Leaf* blade 40–85x20–45 cm, glabrous. *Inflorescence* produced directly from the rhizome, erect, simple, cylindric or somewhat laterally compressed; peduncle 6–33 cm long, spike 11–25 cm long; fertile bracts 9–18, distichous; flower pairs (1–) 3–4 per special paraclade. *Flowers* white to creamy white, slightly fragrant; 3.5–5 cm long, sepals to 4 mm long; corolla tube 24–40 mm long. *Fruits* broadly ellipsoid, pale brown, *ca*. 14x12 mm; seeds 1–2, with a large bifid aril.

Distribution. Widespread in the west Malesian region, from southern Thailand and Peninsular Malaysia to Java, Sumatra, Borneo and Sulawesi (first record).

Habitat and ecology. Small forested hill in garden area.

Notes. The species is readily recognized by its spicate inflorescences, with distichous fertile bracts, that arise on separate shoots from the leaf-bearing ones. Detailed botanical descriptions based on material from Borneo and Thailand, respectively, are provided by Clausager & Borchsenius (2003) and Suksathan & Borchsenius (2008). The single recent collection (*Poulsen et al. 2805*) represents an extension of the known range of the species across Wallace's line. This species is sometimes cultivated in Malaysia and it is difficult to rule out entirely that it has escaped from cultivation. The plants were, however, collected in a more or less primary forest patch amongst cocoa plantations etc. far from the nearest village. The locals also thought it was native. Lacking collections of this species from several primary forest sites nor evidence of cultivation, we cannot be certain whether it has been introduced.

Specimens seen from Sulawesi. **Central Sulawesi**. Samawati (1°1'31.2"N, 121°36'16.2"E), 40 m, 21 February 2009, flowering, *Poulsen & Kinho 2805* (AAU, BO).

6. STACHYPHRYNIUM REPENS (Körn.) Suksathan & Borchs.

Stachyphrynium repens (Körn.) Suksathan & Borchs. , Taxon 54 (4): 1086 (2005). — *Phrynium repens* Körn., Bull. Soc. Imp. Naturalistes Moscou 35(1): 103 (1862). – Type: Java, *Göreng 408* (Turczaninow herb., KW?, LE?).

Stachyphrynium jagorianum (K. Koch) K. Schum. in Engler, Pflanzenr. 4(48): 48. 1902. For a full nomenclatural account see Suksathan & Borchsenius (2005)

Rosulate herb, to 55 cm tall, frequently forming large colonies on the forest floor. *Leaves* 1–3 per shoot; lamina elliptic to oblong, acute to acuminate, 10–20x3.5–5.5 cm, green to dark green above, with more-or-less pronounced darker green stripes following the major veins, pale below, glabrous or pubescent. *Inflorescence* interfoliar, erect, usually simple; peduncle 5–14 cm long; spike 2.5–7.5 cm long with 3–6 distichous fertile bracts; flower-pairs 2 per special paraclade but usually only 1 pair develops. *Flowers* white, *ca*. 10 mm long; sepals to 2.5 mm long; corolla tube 13–18 mm long. *Fruits* broadly ellipsoid to obovate, to 4x5 mm; seeds 1–2, with a large bifid aril.

Distribution. Indo-China, Thailand, Peninsular Malaysia and Indonesia: Sumatra, Java and Sulawesi (first record). Not recorded in Borneo.

Habitat and ecology. Forest-savanna mosaic on sandy soil.

Notes. Easily recognised by its small size and the dark green oblique bands on the upper side of the leaves. A detailed botanical description of this species is provided by Suksathan & Borchsenius (2008). This record represents an extension of the known range of the species across Wallace's line. Only one collection is known from Sulawesi (*Poulsen et al. 2797*) but we found *S. repens* at several localities south of Kendari and it appears to have dispersed to SE Sulawesi a long time ago.

Specimens seen from Sulawesi. Southeast Sulawesi. Tatangge Forest Reserve, Tatangge (4°27'35.6"S, 122° 7'28.1"E), 20 m, 13 February 2009, flowering and fruiting, *Poulsen, Ardiyani, Chahyadi, Gufrin & Lasifu* 2797 (AAU, BO, E).

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